

## **CLAIMS**

What is claimed is:

1. A method, comprising:
  - monitoring a node associated with a contended lock; and
  - putting a processor to acquire the contended lock to sleep until an event occurs.
2. The method of claim 1, wherein the monitoring the node comprises monitoring a lock address corresponding to the contended lock by executing a monitor instruction to activate the monitoring of the node.
3. The method of claim 1, further comprises executing a memory wait (mwait) instruction to put the processor to sleep until the event occurs.
4. The method of claim 1, further comprises:
  - waking up the processor when the event occurs, wherein the event comprises the contended lock becoming available; and
  - the processor acquiring the available lock.
5. The method of claim 1, wherein the contended lock becoming available comprises the processor is next a queue to acquire the contended lock, and the contended lock is released.
6. The method of claim 1, wherein the putting the processor to sleep comprises relinquishing of resources by the processor for other processors to use.
7. The method of claim 4, wherein the waking up comprises inactivating the monitoring of the node, and the processor using the relinquished resources.
8. The method of claim 7, wherein the relinquishing comprises:

- relinquishing of a plurality of registers in a register pool;
  - relinquishing of a plurality of instruction queue entries in an instruction queue;
  - relinquishing of a plurality of store buffer entries in a store buffer; and
  - relinquishing of a plurality of re-order buffer entries in a re-order buffer.
- 9. A method, comprising specifying a monitor address associated with a queue element to monitor the queue element, wherein the specifying comprises executing a monitor instruction and a memory wait (mwait) instruction.
- 10. The method of claim 9, wherein the queue element corresponds with a processor to acquire a contended lock.
- 11. The method of claim 10, wherein the processor is put to sleep while waiting for the contended lock using a combination of monitor/mwait.
- 12. The method of claim 11, wherein the processor is awakened when an event occurs, the event comprising the processor is next a queue to acquire the contended lock, and the contended lock is released.
- 13. A processor, comprising:
  - an execution unit to execute a monitor instruction and a memory wait (mwait) instruction to monitor a node associated with a contended lock; and
  - logic to put a logical processor to acquire the contended lock to sleep until an event has occurred.
- 14. The processor of claim 13, further comprising detection logic to detect the occurrence of the event, wherein the event comprises a designated event including the contended lock becoming available.
- 15. The processor of claim 13, wherein the putting the logical processor to sleep

- comprises relinquishing of resources by the logical processor for other logical processors to use.
16. The processor of claim 13, wherein the logic is further to wake up the logical processor when the event occurs, the waking up comprises inactivating the monitoring of the node, and the logical processing using the relinquished resources.
  17. The processor of claim 16, wherein the relinquishing comprises:
    - relinquishing of a plurality of registers in a register pool;
    - relinquishing of a plurality of instruction queue entries in an instruction queue;
    - relinquishing of a plurality of store buffer entries in a store buffer; and
    - relinquishing of a plurality of re-order buffer entries in a re-order buffer.
  18. A system comprising:
    - a storage medium; and
    - a processor coupled with the storage medium, the processor having
      - an execution unit to execute a monitor instruction and a memory mwait (mwait) instruction to monitor a node associated with a contended lock; and
      - logic to put a logical processor to acquire the contended lock to sleep until an event has occurred.
  19. The system of claim 18, further comprising detection logic to detect the occurrence of the event, wherein the event comprises a designated event including the contended lock becoming available.
  20. The system of claim 18, wherein the putting the logical processor to sleep

comprises relinquishing of resources by the logical processor for other logical processors to use.

21. The system of claim 18, wherein the logic is further to wake up the logical processor when the event occurs, the waking up comprises inactivating the monitoring of the node, and the logical processing using the relinquished resources.
22. A machine-readable medium having stored thereon data representing sequences of instructions, the sequencing of instructions which, when executed by a machine, cause the machine to:  
monitor a node associated with a contended lock; and  
put a processor to acquire the contended lock to sleep until an event occurs.
23. The machine-readable medium of claim 22, wherein the monitoring the node comprises monitoring a lock address corresponding to the contended lock by executing a monitor instruction to activate the monitoring of the node.
24. The machine-readable medium of claim 22, wherein the sequences of instructions which, when executed by the machine, further cause the machine to execute a memory wait (mwait) instruction to put the processor to sleep until the event occurs.
25. The machine-readable medium of claim 22, wherein the sequences of instructions which, when executed by the machine, further cause the machine to:  
wake up the processor when the event occurs, wherein the event comprises the contended lock becoming available; and  
allow the processor to acquire the available lock.

26. The method of claim 22, wherein the putting the processor to sleep comprises relinquishing of resources by the processor for other processors to use.
27. A machine-readable medium having stored thereon data representing sequences of instructions, the sequencing of instructions which, when executed by a machine, cause the machine to specify a monitor address associated with a queue element to monitor the queue element, wherein the specifying comprises executing a monitor instruction and a memory wait (mwait) instruction.
28. The machine-readable medium of claim 27, wherein the queue element corresponds with a processor to acquire a contended lock.
29. The machine-readable medium of claim 28, wherein the sequences of instructions which, when executed by the machine, further cause the machine to put the processor to sleep while waiting for the contended lock using a combination of monitor/mwait.
30. The machine-readable medium of claim 29, wherein the sequences of instructions which, when executed by the machine, further cause the machine to awaken the processor when an event occurs, the event comprising the contended lock becoming available.